CONTRONICS

HUMIDIFIER SYSTEM

HU-64OG-SYS

USER MANUAL

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CE

Contronics Engineering B.V., Ambachtsweg 8, 5492 NJ Sint-Oedenrode, The Netherlands, hereby declares that the product HU-64OG-SYS produced and delivered by Contronics Engineering B.V., is in accordance with the following CE directives:

EMC-Directive	: 2004/108/EG
Directive for low-voltage electrical installation	: 2006/95/EG

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1. PREFACE

This user manual contains the operating, installation and maintenance instructions for the ultrasonic humidifier of type HU-64OG-SYS.

WARNING
It is possible that bacteria could be present in the humidifier's water supply. Some bacteria (Legionella) could be harmful to health if they are present in the aerosols that are blown out by the humidifier.

Through the construction, flushing programme and materials used, Contronics has ensured that the stimulation of bacterial growth is kept to the absolute minimum. In order to ensure the supply of pure water, it is strongly recommended that demineralised water is used (see the Contronics product range). In conditions where bacterial pollution could occur in the surrounding air (e.g. at meat counters) or in areas where hot ambient air could arise (e.g. bakeries), it is also recommended to incorporate an ozone generator in the air supply system (see the Contronics product range). Contronics cannot be held liable for any harm caused by bacteria or micro-organisms. It is the responsibility of the user to regularly carry out maintenance and to check the quality of the supplied water. For these reasons a reverse osmosis filter and an ozone generator have been included in the system.

IMPORTANT
Although the installation of this product may appear quite simple for experts, the manufacturer urges the installer to carefully read through the instructions before starting to install the device.

2. PREAMBLE

Introduction

The humidity in a supermarket is extremely low in the winter when the heaters are working and in the summer with the air conditioning on.
This causes fresh products on show to lose quality quickly because they part with moisture into the dry ambient air.
With a humidification system from Contronics you have the perfect solution for keeping your products fresh long-term.

How do they work?

Purified water is atomized by means of high frequency waves (ultrasonic). This spray of very small droplets is spread like a blanket over the products. The water droplets evaporate by removing the energy from the ambient air and forming a cool moist layer just above the product. The temperature is lowered by approx. 4-5 degrees and the relative humidity will increase to approx. 95%. The fresh product will no longer lose moisture and is also cooled at the same time. Your vegetables and fruit will not become wet.

Hygiene

The mains water used is purified first so that maximum hygiene is guaranteed. A so-called reverse osmosis filter is used for this purpose. It removes all the bacteria, viruses, calcium and minerals that can normally be found in mains water. The system is automatically rinsed through every hour. The humidification process stops then for a short while.
The bacteria that get into the system with the air are dealt with in a built-in ozone generator that works at night.
Ozone (O3) is a molecule with 3 oxygen atoms. It is a strong oxidant that will kill all the bacteria entering. In a short time it reverts to normal oxygen without leaving a residue.
Annual maintenance guarantees problem-free, hygienic use.

Parts of the system

Water treatment (LP-10), humidification (HU-64), ozone generator (OG) and drainage system (POMPUNIT) are combined in the HU-64OG system in a stainless steel frame for ease of installation. The system is plug and play. (See figure 1 and 2).

3. SAFETY REGULATIONS

IMPORTANT
The humidifier has an open water tank. Any overflow of the water tank could damage the electronics inside the humidifier.

The following measures must always be observed:
- **Always disconnect the 230 V mains voltage from the humidifier before moving it and/or carrying out maintenance activities.**
- **Always keep the humidifier horizontal and motionless while it is in operation and for up to 2 minutes afterwards.**
- **Ensure that the water is always discharged via the outlet and ensure that this is never blocked.**
- **The humidifier may only be dismantled by authorized Contronics technicians.**

4. PACKING

The HU system is delivered in recyclable packaging that should be kept for re-shipping the unit for maintenance activities. Any shipment using other packaging could cause damage to the HU for which the manufacturer cannot be held liable.

It is possible that some traces of water could be found in the packaging; all the functions of the HU are thoroughly tested during the quality control and, for this reason, some water could still remain in the HU before it is packed.

The package contains:
- HU system.
- Power cord.
- Instructions for use.

5. CONNECTIONS AND FUNCTIONS

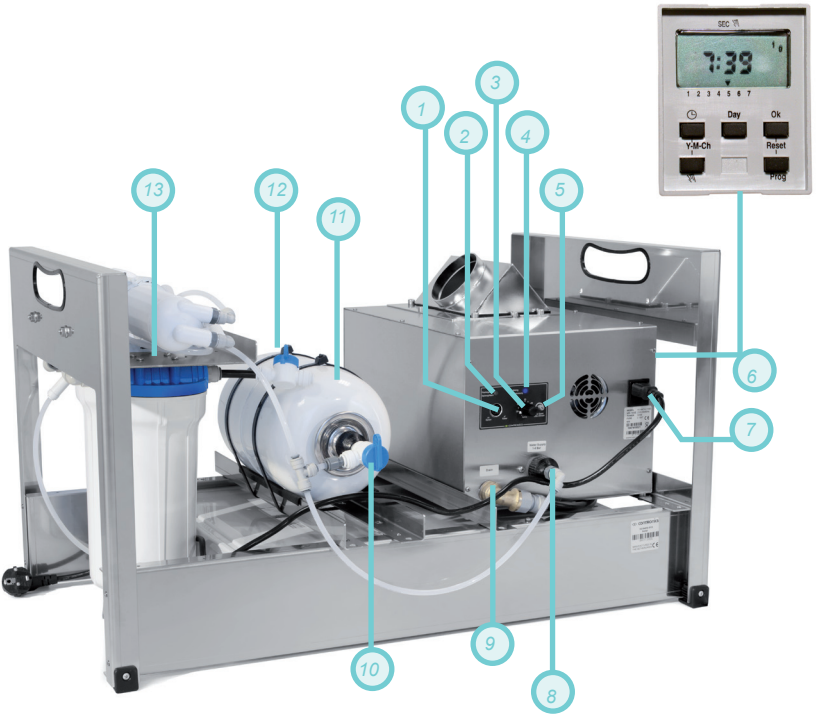


Figure 1 Connections and functions

1. Plug connection for HS-91, DZR-45, HTR-10 or HK-01 (external control 0-10 V).
2. LED for flushing and alarm.
3. Dial for setting the humidity.
4. LED for humidity setting
5. Dial for setting the airspeed.
6. Timer for programming of the ozone generator and humidifier.
7. Mains connection + fuse (230 V± 10%/50-60 Hz).
8. Water supply 3/8”, min. 1 bar/max. 6 bar.
9. Water outlet 1/2” free flow-through.
10. Tap.
11. Buffer tank.
12. Water supply.
13. R.O. unit.

6. INSTALLATION INSTRUCTIONS

IMPORTANT
The guarantee will become void if the system is installed incorrectly or if it is handled in an improper manner.

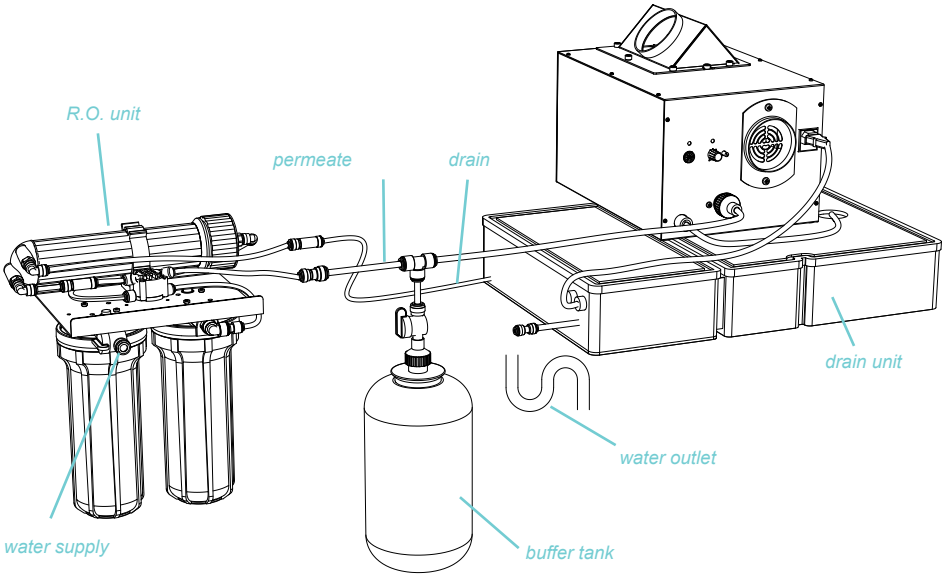


Figure 2. Connections and functions

7. ELECTRICAL CONNECTIONS

Supply voltage (230V AC ± 10%)
Ensure there is an earthed wall socket next to the humidifier.

External control
A HTR-10 can be connected for external /remote control.

IMPORTANT
If an external controller has been connected to the DIN plug, the dial on the humidifier must be set to 0. This will prevent the humidifier from humidifying if a fault occurs in the controller.

8. WATER CONNECTIONS AND FLUSHING CYCLE

IMPORTANT
Thoroughly flush out the piping before connecting the humidifier in order to prevent installation debris from blocking the intake valve.

Water supply
The system has an integrated flow-reduction valve and can handle a water pressure from a minimum of 1 bar to a maximum of 6 bar. The water level in the humidifier is controlled by a float switch and a solenoid valve.

Water outlet
The system is equipped with a pump unit and a catchment tray because there is not usually a drain near the system. When this tray is full it will be emptied automatically.

Flushing
The standard factory setting for the flushing cycle is once every hour.

Standard cycle
The humidifier's "flushing/alarm" LED will light up every hour. The device will start the flushing cycle:
- The fogging will stop.
- The water tank will be flushed for approx. 15 seconds (depending on the water pressure).
- The water will be discharged.
- The humidifier will be re-filled and will restart normal operation.
- The green LED will blink while this procedure is taking place.

If the humidifier is switched off (230V supply voltage switched off), the water content will be discharged to the drain unit.

9. AIR CONNECTIONS

Air outlet
The air outlet must always be extended by a 80 cm pipe to allow larger droplets to be captured. Mount the outlet so that it slopes towards the humidifier to ensure that any condensed fog can flow back.
The connected pipe must be free from dust, dirt and oil residues. The length of the air outlet channel to the outlet may not exceed 6m with a diameter that remains the same.

10. EXAMPLE SET-UP (FRESH IN FRESH OUT)

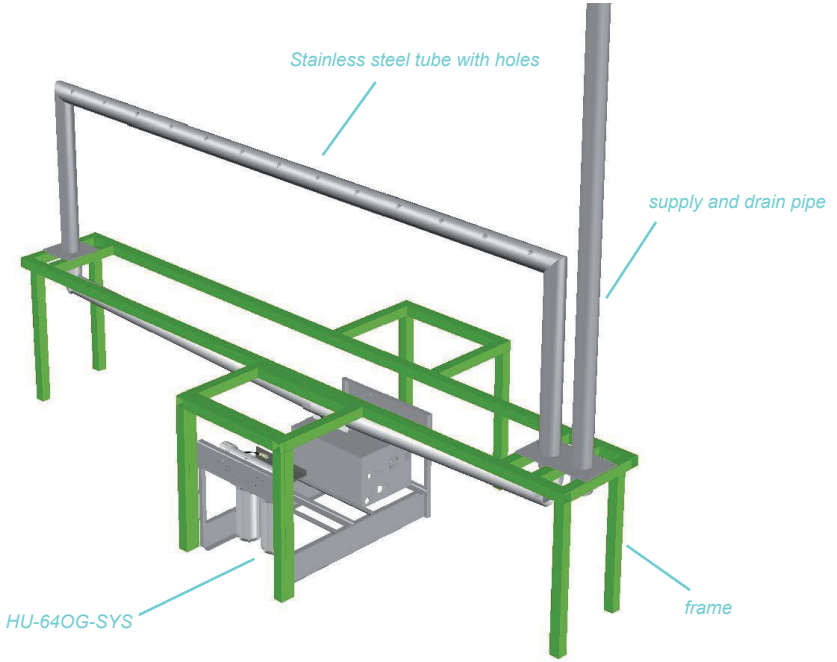


Figure 3. Set-up witht U-Tube

The U-pipe is placed on the frame and connected to the humidifier.
The horizontal part of the U pipe has holes out of which the humidified air streams.
The longer vertical pipe contains the supply and drainage of water and electricity that is supplied from the ceiling.
See also Fresh-in Fresh-out on www.contronics.nl

IMPORTANT
The connected pipes must be free from dust, dirt and oil residues.

11. SWITCHING ON AND STARTING UP/FUNCTIONAL TEST

Switching on

Check the following before the humidifier is switched on for the first time:

- The humidifier is positioned level.
- All pipes have been properly connected.
- The mains voltage is correct.
- The water discharge channel has been connected according to the instructions.
- The water supply has been connected according to the instructions. The water piping has been flushed in order to prevent any installation debris blocking the water valve.

IMPORTANT
Never switch the mains voltage on if the humidifier is not in the correct position or if it is placed upside-down, as this would cause the transducers to burn.

Start up and functional test

- Open the water valve.
- Set the % RH knob on maximum position.
- Switch on the power.
- Set the % knob in the desired position.
- Control if necessary the airspeed with setting 5 (figure 1).

Note: During start up and flushing (water filling) of the humidifier the LED "Flushing/alarm" will blink green.This is a normal indication on the humidifier during this procedure.

IMPORTANT
If the humidifier becomes overheated it will switch off. Once it has cooled down it will automatically switch on again. In case of overheating, the "Flushing/alarm" LED will show red.

The following conditions could cause overheating:

- **A blockage in the air inlet.**
- **A blockage in the air outlet.**
- **Air intake temperature too high.**
- **Water temperature too high.**
- **Water discharge blocked.**
- **Ambient temperature too high.**
- **Ventilator speed set too low.**

12. OZONE GENERATOR

In the HU-64OG-SYS an ozone generator is integrated. Ozone ensures that any bacteria that are present in the humidifier and the connected piping will be destroyed.

Ozone only takes effect if the humidification is switched off while the ozone generation is taking place. A programmable timer has been incorporated in the side panel of the humidifier for switching the ozone generator and the humidification on and off. Contronics sets the timer to a default setting of 2 hours of ozone generation at night, between 2 a.m. and 4 a.m., while the humidifier is switched off. This setting can be changed (see “Applications”).

The blue LED indication for humidification flashes while the ozone generator is working. The ventilator speed is then at maximum. Independent of the adjustment.

WARNING
Ozone could be harmful to your health if the gas is inhaled over a longer period of time in a higher concentration. However, this concentration only occurs inside the humidifier and the connected piping. Once discharged, ozone gas quickly breaks down into ordinary oxygen, without any residual products.

The timer is independent of the mains supply and has a rechargeable battery incorporated in the ozone module for this purpose.

WARNING
If these batteries have to be replaced, the old battery must be disposed off as chemical waste or, alternatively, returned to the manufacturer.

The following information about the ozone generator can be found on www.contronics.nl:
- Programming the timer.
- What is ozone?

13. DRAIN UNIT

The pump unit fitted in the drain unit can transport the water over a distance of 30 meters and 10 meters upwards.

14. MAINTENANCE

Regular maintenance is important for the optimum operation of the system and to maintain hygiene.

Humidifier

The maintenance interval of the water reservoir will depend on the quality of the water and the purity of the air that is sucked in. Contronics advises al least 1 x year maintenance.
The transducers must be replaced after approximately 20,000 operating hours (i.e. after about 2 years in the case of continuous use).

IMPORTANT
Make sure that the transducers are not damaged during cleaning.

Check the following before starting maintenance or shipping the humidifier:
- The mains plug has been removed from the socket and the ventilator is not moving.
- The water supply has been closed.
- The water supply pipe has been removed.
- The humidity sensor plug has been removed.
- The water reservoir is empty and the water discharge hose has been removed.
- The humidifier remains horizontal while dismantling.

Cleaning
- Remove the connecting flange.
- Clean the reservoir with a soft brush or cloth.

In the case of water scale, the reservoir can be filled with household vinegar. Allow to soak for 4-12 hours then clean with a soft brush and flush through. Remove the filter from the water inlet. Clean the filter or replace it with a new one. Flush the water discharge with water and clean it with a round brush.

R.O. system

Some maintenance is necessary in order to guarantee the long service life of the system. Normal maintenance consists of replacing the sediment filter and the active carbon filter(s). This should be done at least once a year if the humidifier is in continuous use. If the supply water is heavily polluted with minerals or chlorine, however, it is recommended to do this more often.

Checking the demineralised water

- Take a sample of the supply water.
- Measure the conductivity of the supplied tap water using a micro-siemens meter.
- Take a sample of the demineralised water.
- Measure the conductivity of the demineralised water using a micro-siemens meter.
- Divide the value found for the demineralised water by the value found for the supplied tap water and multiply the result by 100%:
  < 10%: the water quality is good
  Between 10% and 20%: the water quality is acceptable
  > 20%: the water quality is poor – replace the membrane.
- If the micro-siemens value for the supplied tap water is >500 uS, it is recommended to install a de-scaling system ahead of the R.O. system.

Checking the buffer tank

If the buffer tank is not completely filled during the start-up procedure, it is possible that the pressure in the tank is too high compared to the pressure of the supplied water. In this case it is possible to release some of the (air) pressure step-by-step via the valve situated underneath the tank under a black cap, until the tank is filled. It is also possible to measure the pressure with the same kind of meter that is used for car tyres. To check that the pressure is not too low, the tank must be disconnected with the tap closed. Open the tap in an area where this is possible and allow the tank to empty completely.
If the pressure is too low, it is possible to increase the pressure using the valve and the same system that is used to increase the pressure in car tyres. The pressure is normally adjusted to 0.45 bar.

Procedure:

Before replacing the filters, the system must be de-pressurised.

1. Switch the humidifier off.
2. Close the supply tap.
3. Close the tap on the storage tank.
4. Disconnect one of the tubes from the storage tank and collect the excess water.
5. Exchange the filters by unscrewing the filter holders.
   Beware: The filter holders still contain water.
6. Before re-installing the filters, the O-ring must be checked for damage and correct seating.
7. The holders can be cleaned with soap and water or with chlorine, if necessary. Rinse thoroughly afterwards.
8. After re-installing, screw the holders back into place (hand-tight!).

Starting up again:

1. Open the supply tap and let the system flush through for about 5 minutes (in order to flush out any air).
2. Supply voltage to the pump.
3. Reconnect the tube to the storage tank.
4. Open the tap on the storage tank.
5. Wait until the system reaches the correct pressure (the discharge water will stop).
6. Switch the humidifier on again.

Ozone generator

The ceramic element must be cleaned once a year:

- The humidifier must be disconnected from the mains.
- Remove the screws on the side where the timer is located.
- Remove the side panel and disconnect the timer.
- Remove the 2 Phillips screws (bottom and top) from the stainless steel cover plate (on the black aluminium casing).
- Remove the ceramic element from the holder.
- Carefully clean the ceramic element on both sides with cleaning spirit or alcohol.
- If the vapour-deposited metal on the ceramic element is damaged, replace the ceramic element.
- Re-assemble in the reverse order.

Replacing the transducers

The replacement of the transducers can only be done by Contronics or representatives authorised by Contronics.

IMPORTANT
All maintenance must be carried out by Contronics or by an organisation authorized by Contronics.

Drain unit

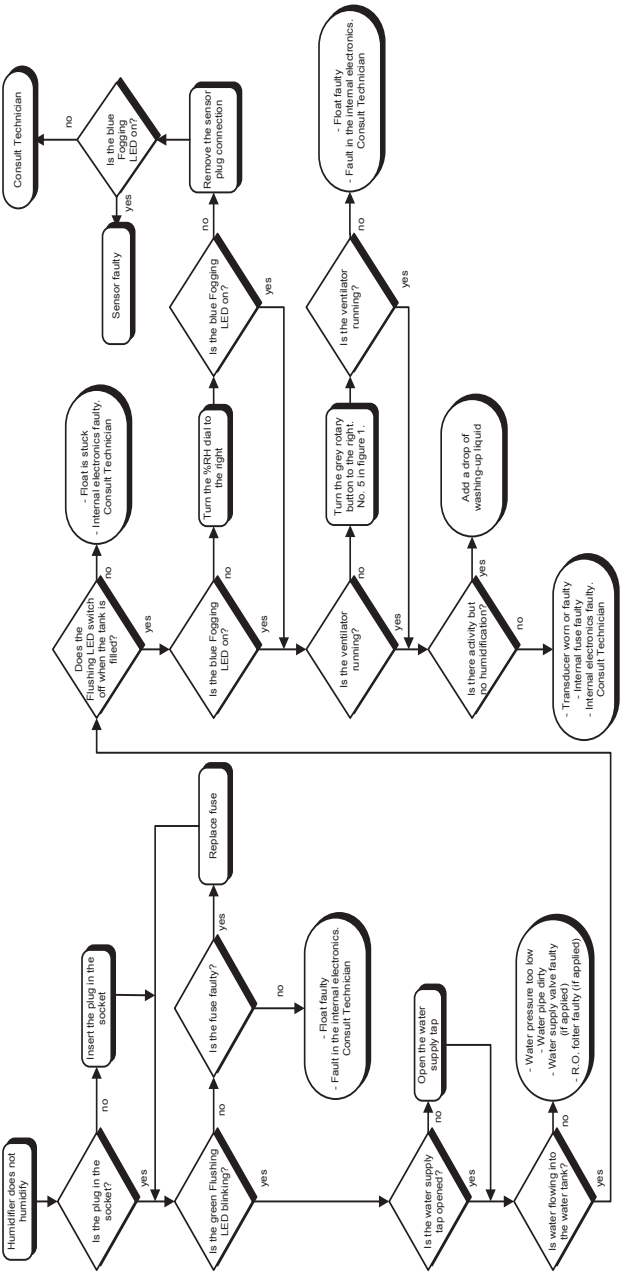
The HU-64OG-SYS has a drain unit to catch the waste water and pump it away to the drain. The pump unit requires little maintenance. Only the XP STAYCLEAN has to be replaced annually. The XP STAYCLEAN deals with the disinfection in the drain unit. Figure 6. shows where the XP STAYCLEAN should be fitted.

Figure 4. Drain unit

Figure 5. XP STAYCLEAN

Figure 6. Holder for the XP STAYCLEAN

15. MALFUNCTIONS



16. TECHNICAL SPECIFICATIONS

	HU-64OG-SYS
Transducer frequency	1,7 MHz
Maximum capacity	0-4,0 kg/hour (adjustable)
Service life of the transducers	10.000-20.000 hour
Size op the water droplets	1-3 micron
Diameter of outlet flange	1 x 80 mm
Diameter of suction flange	80 mm
Airflow	adjustable (0-60 m^3 0 Pa)
Outlet pipe length	6 meter
Water pressure	1-6 bar
Water connection	3/8” external
Flushing frequency	1 x per hour (adjustable)
Water discharge	3/8" external
Content of water tank	1100 cm^3
Mains Voltage	230V ± 10% 50/60 Hz
Power consumption	350 W
Ambient temperature	0 °C till 35 °C
Water temperature	5 °C till 15 °C
Dimensions (LxWxH)	770 x 490 x 460 mm
Housing	RVS 316L
Weight	41 kg

OG	
Capacity ozone	0-20 mg/hour (adjustable)
Controlling ozone	Via timer with day programming

LP-10	
Retention of salts and minerals (%)	98
Buffer tank (L)	2
Inlet pressure (bar)	0.45

DRAINUNIT	
Pump height	10 meter
Max. length of drain	30 meter

17. OPTIONS LP-10WS, LP-10WSG, LP-10WSWSG, LP-10BP and HTR-10

This extra manual shows specific operation, installation and maintenance instructions for the LP-10WS, LP-10WSG and de LP-10WSWSG options.

Figure 7. LP-10WS

LP-10WS is an LP-10 combined with a permeate pump. The pump, that is water-powered, ensures that the rin sing water is used more efficiently. The LP-10 needs 30 litres of rinsing water to produce 10 litres of demineralized water. The LP-10WS only uses 20 litres for this.
The LP-10WS saves 85 m3 on an annual basis.
See graph and specifications page 21.

Figure 8. LP-10WSG

The LP-10WSG continuously monitors the membrane function. Normally the membrane would be checked 1 x a year. This is now done automatically and an indication is given when the membrane needs replacing. If the quality of the membrane gets below a certain value, the humidification system that is connected to the LP-10WSG will be switched off.
See specifications page 21.

Figure 9. LP-10WSWSG

The LP-10WSWSG combines both the options above.

Figure10. LP-10BP

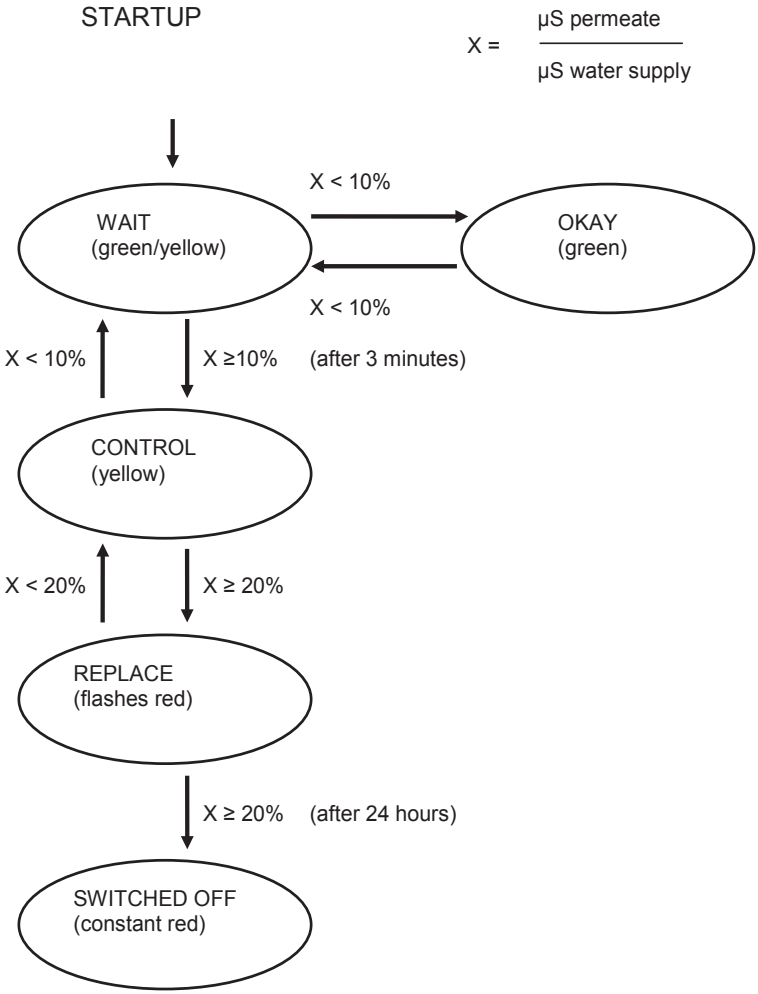
The LP-10BP is used when the water pressure is < 3 bar.
See specifications page 21.

Figure 11. HTR-10

The HTR-10 is a room hygrostat and remote control for the HU-xxx series of air humidifiers.
A very accurate air humidity sensor and temperature sensor are built-in. The humidity sensor is also very accurate in the higher regions of the relative air humidity.
A built-in heating element in the sensor element ensures that the sensor stays dry when the dew point is reached.
The heart of the electronics is a microchip designed and programmed by Contronics.
The electronic circuit board is protected from moisture. The HTR-10 remote control is used in combination with a Fresh in Fresh out system. See specifications page 21.

18. WORKINGS OF WSG OPTION

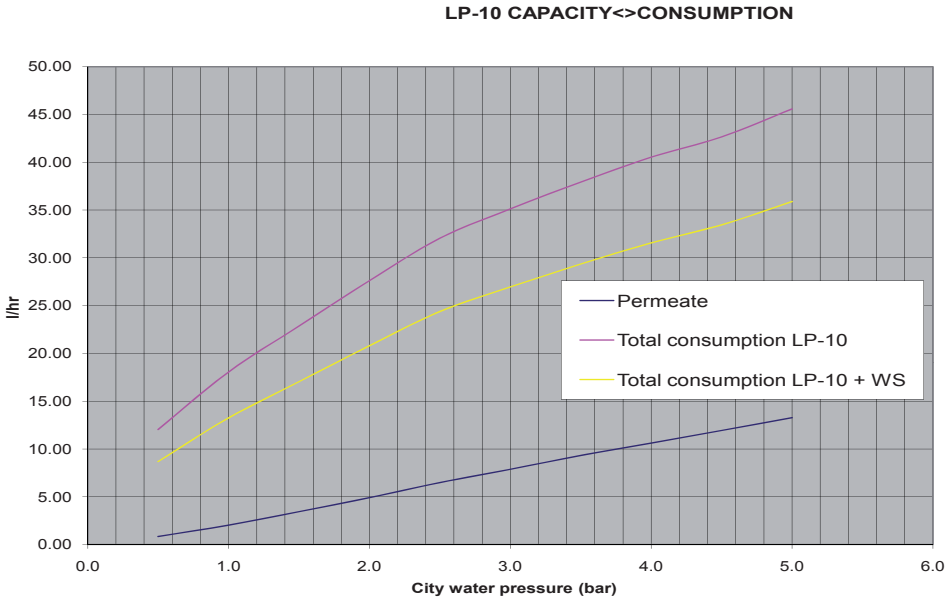
The Osmosis is working properly when the green LED lights up. When the yellow LED lights up, the membrane needs to be replaced during a service. When the red LED flashes, the membrane must be replaced immediately. If it is not replaced within 24 hours the red LED will light up and the humidifier will be switched off.



19. SPECIFICATIONS OPTIONS

	LP-10WS	LP-10WSG	LP-10WSWSG	LP-10BP
Electricity consumption (W)	n/a	2	2	25
Mains voltage (V)	n/a	230	230	230
Maximum switching capacity (W)	n/a	500	500	500
Yield in respect to added water (%)	35 - 40	20 - 35	35 - 40	20 - 35
Dimensions LxWxH (cm)	36x23x43	36x23x43	36x23x43	36x23x46

	HTR-10
Mains voltage (V)	12
General accuracy	0,4 ºC bij 25 ºC
Permissible ambient temperature	50 ºC
Reaction time	5 sec. temperature 4 sec. humidity
Dimensions LxWxH (mm)	125x65x30



DISCLAIMER
Contronics works continuously on the further development of its humidifiers. We therefore reserve the right to modify the design, construction and technology of the product at any time. For this reason, no claims can be made based on the data, illustrations and description in this user manual.

Additional, up-to-date information is available on www.contronics.nl.

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